



## City of Danville Virginia

427 Patton Street, Room 304 PO Box 3300  
Danville, Virginia 24541 Danville, Virginia 24543

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### INVITATION FOR BID

Bid No: IFB 14/15-138

Title: Pad/Pole Mount Transformers

Bid Closing Date: Sealed Bids shall be accepted no later than May 8, 2015 at 2:00 p.m. at the Purchasing Department, 427 Patton Street, Room 304, Danville, VA 24541

Direct Inquires to: J. Gary Via, Director of Purchasing  
(434) 799-6528

### TABLE OF CONTENTS

1.0	Scope
2.0	Delivery
3.0	Supplemental General Conditions
4.0	Specifications
PP1	Bid Proposal and Required Submittal Pages



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## IFB 14/15-138 Pad/Pole Mount Transformers

### 1.0 SCOPE

It is the intent of this "Invitation" to secure a vendor(s) to furnish transformers for the Department of Power and Light. This will be a one time shipment.

#### 1.1 Submit invoice(s) to:

City of Danville  
Purchasing Department  
PO Box 3300  
Danville, VA 24543

#### 1.2 Deadline

Sealed bids shall be submitted no later than May 8, 2015 at 2:00 pm to:

City of Danville  
Purchasing Department  
Attn.: J. Gary Via  
427 Patton Street, Room 304  
Danville, VA 24541

### 2.0 DELIVERY

#### 2.1 All equipment shall be delivered to:

City of Danville,  
Division of Power and Light  
Utility Service Building  
1040 Monument Street  
Danville, Virginia 24541

#### 2.2 The manufacturer shall notify the City of shipment approximately forty-eight (48) hours before arrival.

### 3.0 SUPPLEMENTAL GENERAL CONDITIONS

#### 3.1 Award Criteria

3.1.1 The award will be made to the lowest responsible bidder whose proposal conforming to the invitation will be most advantageous to the City, price and other factors considered such as delivery time, quality, operating and maintenance cost, service, resale value, etc. NOTE: DELIVERY TIMES MAY BE A MAJOR FACTOR IN AWARD OF BID.

3.1.2 The City reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

#### 3.2 Authority

3.2.1 The Director of Purchasing as the designee of the City Manager has the sole responsibility and authority for negotiating, placing, and when necessary modifying each and every invitation to bid, purchase order or other award issued by the City of Danville. In the discharge of these responsibilities, the Director of Purchasing may be assisted by assigned buyers. No other City officer or employee is authorized to order supplies or services, enter into purchase negotiations, or in any way obligate the government of the City of Danville for an indebtedness. Any purchases contrary to these provisions and authorities shall be void and the City shall not be bound thereby.

3.2.2 This procurement process, including withdrawal of bids and appeals or protests, is governed by the "PROCUREMENT CODE OF THE CITY OF DANVILLE, VIRGINIA". Copies of the Procurement Code may be obtained by writing the City of Danville Purchasing Department, PO Box 3300, Danville, VA 24543.

#### 3.3 Bid Preparation

3.3.1 Bid proposals must be written in ink or typewritten and shall be submitted on the forms issued. Unsigned bids will not be accepted. No bid may be considered if received after the time shown on Title Page. Bidders are expected to examine all instructions and specifications. Failure to do so will be at the Bidder's risk. Erasures or other changes must be initialed by the person signing the bid.

3.3.2 Envelopes containing bids must be sealed and marked in the lower left hand corner with the invitation number and the words IFB 14/15-138 "Pad/Pole Mount Transformers" and submitted to the office indicated on the title page.

#### 3.4 Bids Binding 60 Days

Unless otherwise specified all formal bids submitted shall be binding for sixty (60) calendar days following bid-opening date.

#### 3.5 Enforcement

This Agreement and the performance hereof shall be governed by and enforced under the laws of the Commonwealth of Virginia, and if legal action by either party is necessary for or with respect to the enforcement of any or all of the terms and conditions hereof, then exclusive venue therefore shall lie in the City of Danville, Virginia.

### 3.6 Interpretation

3.6.1 If any person contemplating the submission of a bid on this invitation is in doubt as to the true meaning of any part of the plans, specification or other document, he should submit a written request for an interpretation thereof to the Director of Purchasing. An interpretation of the bid invitation document will be made only by written addendum issued to each potential bidder. **THE CITY WILL NOT BE RESPONSIBLE FOR EXPLANATIONS OR INTERPRETATIONS OF BID INVITATION DOCUMENTS EXCEPT AS ISSUED IN ACCORDANCE HEREWITH.**

3.6.2 All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.

### 3.7 Patents

The Vendor agrees to indemnify and save harmless the City, and all personnel from all suits and actions of every nature and description brought against them or any of them, for or on account of the use of patented appliances, products, or processes, and he shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted upon request of the City as a necessary requirement in connection with the final execution of any contract in which such patented appliances, products, or processes are used.

### 3.8 Prices

3.8.1 All prices are based on delivery to the destination designated in the invitation including packing charges. Any discounts for payment (Invoicing Terms) should be entered on the proposal page and will be considered in the evaluation.

3.8.2 Unless lump sum is specifically requested, unit and extended prices should be given. Failure to do so may cause bid to be rejected. In all cases, the unit price shall govern.

### 3.9 Performance

In case of default by the Vendor, the City may procure the commodity or services from other sources and hold the Vendor responsible for any excess costs occasioned thereby.

### 3.10 Specifications and Product Description

When brand names, Delivery ARO numbers, trade names, catalog numbers or cuts are listed, they are, unless otherwise specified, included for the purpose of furnishing bidders with information concerning the style, type or kind of article desired and a bidder may offer an article which he certifies to be equal in quality, performance and other essential characteristics. Any available printed material or literature which describes the product being offered for sale shall be included with the bid. The City shall be the sole judge of suitability of substitutes offered. When a formal numbered specification is referred to in this invitation, no deviation will

be permitted and the bidder will be required to furnish articles in conformity with that specification.

### 3.11 Taxes

The City is exempt from payment of State Sales and Use Tax on all tangible personal property purchased or leased for its use or consumption. Certificate of Exemption will be furnished upon request.

### 3.12 Vendor's Relationship to the City

#### 3.12.1 Independent Contractor

It is expressly agreed and understood that the Vendor is in all respects an independent Contractor as to work and is in no respect any agent, servant, or employee of the City. The contract specifies the work to be done by the Vendor, but the method to be employed to accomplish the work shall be the responsibility of the Vendor.

#### 3.12.2 Subcontracting

Vendor may subcontract services to be performed hereunder with the prior approval of the City, which approval shall not be unreasonably withheld. No such approval will be construed as making the City a part of, or to, such subcontract, or subjecting the City to liability of any kind to any subcontractor. No subcontract shall, under any circumstances, relieve the Vendor of its liability and obligation under this contract; and despite any such subcontracting the City shall deal through the Vendor, and subcontractors will be dealt with as representatives of the Vendor.

#### 3.12.3 Payments to Subcontractors

a. The contractor shall take one of the two following actions within seven days after receipt of amounts paid to the contractor by the City of Danville for work performed by the subcontractor;

1. Pay the subcontractor for the proportionate share of the total payment received from the agency attributed to the work performed by the subcontractor under that contract; or

2. Notify the agency and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

b. Individual Contractors shall provide their social security numbers and proprietorships, partnerships, and corporations to provide their federal identification numbers.

c. The contractor shall pay interest to the subcontractor on all amounts owed by the contractor that remain unpaid after seven days following receipt by the contractor of payment from the City of Danville for work performed by the subcontractor, except for amounts withheld as allowed in subdivision 1.

d. Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month.

The contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.

A contractor's obligation to pay an interest charge to a subcontractor pursuant to the payment clause in this section shall not be construed to be an obligation of the City of Danville. A contract modification shall not be made for the purpose of providing reimbursement for the interest charge. A cost reimbursement claim shall not include any amount for reimbursement for the interest charge.

#### 3.12.4 Novation

The Vendor shall not assign or transfer, whether by as Assignment or Novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the City; provided, however, that assignments to banks, trust companies, or other financial institutions for the purpose of securing bond may be made without the consent of the City. Assignment or Novation of this Contract shall not be valid unless the Assignment or Novation expressly provides that the assignment of any of the Vendor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, and equipment.

#### 3.13 Drug Free Work Place

During the performance of this contract, the vendor agrees to:

- a. Provide a drug-free workplace for the vendor's employees;
- b. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the vendor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;
- c. State in all solicitations or advertisements for employees placed by or on behalf of the vendor that the vendor maintains a drug-free workplace;
- d. Include the provisions of the foregoing clauses in every subcontract or purchase order of or over \$10,000, so that the provisions will be binding upon each subcontractor or vendor;

"Drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a vendor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

### 3.14 Indemnification

The Vendor shall indemnify the City, its agents, officers, and employees, against any damages to property or injuries to or death of any person or persons, including property and employees or agents of the City, and shall defend and indemnify the City, its agents, officers, and employees, from any claims, demands, suits, actions, or proceedings of any kind, including workers' compensation claims, of or by anyone, in any way resulting from or arising out of the operations in connection with the work described in the contract, including operations of subcontractors and acts or omissions of employees or agents of Vendor or Vendor's subcontractors. Vendor shall procure and maintain, at Vendor's own cost and expense, any additional kinds and amount of insurance that, in Vendor's own judgment, may be necessary for Vendor's proper protection in the prosecution of the work.

b. The Vendor shall, at his own expense, appear, defend, and pay all charges of attorney and other expenses arising there from or incurred in connection therewith, and, if any judgment shall be rendered against the City, and/or its officers, agents, and employees, in any such action, the Vendor shall, at his own expense, satisfy and discharge the same. The Vendor expressly understands and agrees that any performance bond or insurance protection required by this contract, or otherwise provided by the Vendor, shall in no way limit the responsibility to indemnify, keep, and save harmless and defend the City, its agents, officers, and employees as herein provided.

c. The Vendor shall assume all risks and responsibilities for casualties of every description in connection with the work, except that he shall not be held liable or responsible for delays or damage to the work caused by acts of God, acts of Public Enemy, acts of Government, quarantine restrictions, general strikes through the trade, or by freight embargoes not caused or participated in by the Vendor. The Vendor shall have charge and control of the entire work until completion and acceptance of the same by the City.

d. The Vendor shall alone be liable and responsible for, and shall pay, any and all loss or damage sustained by any person or party either during the performance or subsequent to the completion of the work under this agreement, by reason of injuries to persons and damage to property, buildings, and adjacent work, that may occur either during the performance of the work covered by this contract or that may be sustained as a result of or in consequence thereof, irrespective of whether or not such injury or damage be due to negligence or the inherent nature of the work.

e. The Vendor, however, will not be obligated to indemnify the City, its officers, agents, or employees against liability for damage arising out of bodily injury to persons or damage to property caused by or resulting solely from the negligence of the City or its officers, agents, and employees.

### 3.15 Insurance

The Vendor shall not commence work under any contract until he has obtained all the insurance required hereunder and such insurance has been approved by the City; nor shall the Vendor allow any Subcontractor to commence work on his subcontract until all similar insurance has been so obtained and approved. Approval of the insurance by the City shall not relieve or decrease the liability of the Vendor hereunder.

a. Worker's Compensation including Occupational Disease and Employer's Liability Insurance: The Vendor shall take out and maintain during the life of the Contract, Workers' Compensation and Employer's Liability Insurance for all of his employees to be engaged in

work on the project under this Contract in an amount no less than the minimum allowed by the State Corporation Commission, and in case any such work is sublet, the Vendor shall require the Subcontractor similarly to provide Workers' Compensation and Employers' Liability Insurance for all of the latter's employees to be engaged in such work.

b. Comprehensive General Liability Insurance: The Vendor shall maintain during the life of the Contract comprehensive general liability insurance as shall protect him and the City of Danville and its officers, agents and employees from claims for damages for personal injury, including death, as well as from claims for property damage, which may arise from operations under the Contract, whether such operations be by himself or by any Subcontractor, or by anyone directly or indirectly employed by either of them. The amount of such insurance shall be not less than a combined single limit of \$1,000,000.00 per occurrence on bodily injury and property damage and \$1,000,000.00 aggregate on completed operations. The comprehensive general liability insurance shall provide the following coverage:

- Comprehensive
- Premises – Operation
- Products/Completed Operations Hazard
- Contractual Insurance
- Independent Contractor and Subcontractor
- Broad Form Property Damage
- Personal Injury

c. Automobile liability insurance with minimum combined single limits of \$500,000.00 per occurrence. This insurance shall include bodily injury and property damage for the following vehicles:

- Owned Vehicles
- Non-owned Vehicles
- Hired Vehicles

d. Umbrella Policy: At the option of the Vendor, primary limits may be less than required, with an umbrella policy providing the additional limits needed. This form of insurance will be acceptable provided that the primary and umbrella policies both provide the insurance coverage herein required. However, any such umbrella policy must have minimum coverage limits of \$2,000,000.00.

### 3.16 Equal Employment:

During the performance of the contract, the vendor agrees as follows:

a. The Vendor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin, except where religion, sex, or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Vendor. The Vendor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions for this nondiscrimination clause.

b. The Vendor also shall not discriminate against any handicapped person in violation of any state or federal law or regulation and shall also post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this additional nondiscrimination clause.

c. The Vendor, in solicitations or advertisements for employees placed by or on behalf of the Vendor, will state that such vendor is an equal opportunity employer.

d. Notices, advertisements, and solicitations placed in accordance with Federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section

e. The Vendor will include the provisions of the foregoing paragraphs in every subcontract or purchase order over \$10,000 so that the provisions will be binding upon each subcontractor or vendor.

f. The Vendor will otherwise comply with all other applicable provisions of local, State, and Federal law.

g. The contractor does not, and shall not during the performance of the contract for goods and services in the Commonwealth, knowingly employ and unauthorized alien as defined in the Federal Immigration Reform and Control Act of 1986.

h. Contractors organized as a stock or nonstick corporation, limited liability company, business trust, or limited partnership or as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Virginia Title 13.1 or Title 50 or as otherwise required by law.

i. A contractor organized or authorized to transact business in the Commonwealth pursuant to Virginia Title 13.1 or Title 50 shall include in its bid or proposal the identification number issued to it by the State Corporation Commission. Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

## 4.0 SPECIFICATIONS

### 4.1 CITY OF DANVILLE, VIRGINIA, DIVISION OF POWER & LIGHT

#### SPECIFICATION NO. E-88-5

#### SINGLE PHASE PAD-MOUNTED DISTRIBUTION TRANSFORMERS

#### 25 KVA – 250 KVA

### DESIGN REQUIREMENTS – GENERAL

All units shall have the following design features:

- All units shall meet all applicable ANSI standards and written certification, including but not limited to test results, shall be provided where applicable
- Single-phase, 7200 volts primary winding, suitable for use on a 7200/12470 volts grounded-Y system
- Secondary winding for **240/120 Volts**
- 60 hertz
- 95 kv BIL
- Average winding rise shall be limited to no more than 65<sup>0</sup> C
- Low-profile ANSI Type II configuration
- Pressure relief valve meeting ANSI C57.12.20
- Primary no-load taps, 2-2.5% above and 2-2.5% below 7200 volts.
- **\*\***Unit shall be filled with virgin “PCB-Free<1-ppm” mineral oil dielectric fluid with a maximum allowable concentration of less than 1-ppm PCB. A letter from the manufacturer is required to certify that only “PCB-Free” oil is used in the manufacturing process.  
“**Less than 1 PPM PCB**” shall be etched or otherwise permanently written on the nameplate.

### Low VOLTAGE SECTION

The low voltage (secondary) side of the cabinet shall contain the following design features:

- Three (3) low voltage bushings with spade type, tin plated copper alloy with j-type nema drilling (*4-hole 25 & 50 kva, 6-hole 75kva & above*)
- Low voltage bushings shall be plainly marked for easy identification of phase and neutral position.
- Spades to be suitable for use with concentrically-mounted metering current transformers having a maximum throat depth of 2 1/2" (6.35 cm).

### HIGH VOLTAGE SECTION

The high voltage (primary) side of the cabinet shall contain the following design features:

- 2 – 15 kv bushing wells complete with 200 amp loadbreak bushing inserts for loop-feed design
- Primary grounding pad with terminals for 2 - #2 AWG bare copper conductors
- Bayonet fusing with load-sensing
- External tap-changing handle

### DATA TO BE SUPPLIED BY SUCCESSFUL VENDOR

Complete information and dimensional drawings on recommended transformers (preferred and alternate) are to be furnished.

Three (3) instruction booklets containing complete descriptive information and a parts list showing catalog numbers, quantities and diagrams to be included with each unit and three (3) sets of drawings for each unit to include, but not limited to, the following:

- Nameplate
- Outline
- Applicable detail drawing, dimensions and features, plus a nameplate drawing used for construction, three (3) copies each.

**LOSSES**

Losses will be evaluated according to the formula shown below. Manufacturer shall provide the necessary information at the time of bid opening to perform the loss evaluation. This loss information should be based on 85 deg. C. 100% voltage using “guaranteed loss” figures; i.e., the average of the losses of the units involved shall not exceed quoted values and the losses of any individual unit shall not exceed the tolerances in Table 16, ANSI Standard C57.12.00.

In the event that the actual tested losses of the quoted transformer(s) exceed by 10% the guaranteed loss values quoted in the proposal, the purchase price of the unit(s) shall be reduced by the evaluated cost of the difference between actual and guaranteed losses.

Information to be supplied for each unit:

- i) No-Load losses: \_\_\_\_\_ KW x \$ **2,800.00**/KW = \_\_\_\_\_
- ii) Copper losses: \_\_\_\_\_ KW x \$ **1,200.00**/KW = \_\_\_\_\_
- iii) Purchase price (each unit) = \_\_\_\_\_
- Total Ownership Cost (i+ii+iii) = \_\_\_\_\_

**BID EVALUATION**

Bids will be evaluated based on the Total Ownership Cost (TOC) of each Bids unit as detailed in Section 8.0 above.

A 5% window will be utilized. Any TOC within 5% of the lowest TOC will be grouped as equal. Bids will then be awarded to the low purchase price within that group.

It is desired that this bid evaluation result in a blanket order to one vendor for all pole-mounted transformers units. However, any combination of purchases deemed most advantageous by the City may be selected.

Manufacturer’s Distributors may, as an alternate, provide proposals on stocking, partnering, or consignment arrangements if these arrangements will provide the City with benefits related to either cost or delivery time. The City reserves the option to consider these alternatives during the evaluation of bids.

**DOE STATEMENT**

**[6450-01-P]  
DEPARTMENT OF ENERGY  
10 CFR Part 431  
[Docket No. EERE-2010-BT-STD-0048]  
RIN: 1904-AC04**

**Energy Conservation Program: Energy Conservation Standards for Distribution Transformers**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Final rule.

**SUMMARY:** The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including distribution transformers. EPCA also requires the U.S. Department of Energy (DOE) to determine whether more-stringent standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this final rule, DOE is adopting more-stringent energy conservation standards for distribution transformers. It has determined that the amended energy conservation standards for this equipment would result in significant conservation

4.2

**CITY OF DANVILLE, VIRGINIA, DIVISION OF POWER & LIGHT****SPECIFICATION NO. E88-4****DISTRIBUTION TRANSFORMERS, SINGLE PHASE, OVERHEAD****15KVA-167KVA****DESIGN REQUIREMENTS – GENERAL**

All units shall have the following features:

- All units shall meet all applicable ANSI standards and written certification, including but not limited to test results, shall be provided where applicable
- Single-phase, 7200 volts primary winding, suitable for use on a 7200/12470 volts grounded-Y system
- Conventional protection
- 60 hertz
- 95 kv BIL
- Average winding rise shall be limited to no more than 65<sup>o</sup> C
- Pressure relief valve meeting ANSI C57.12.20
- Primary no-load taps, 2-2.5% above and 2-2.5% below 7200 volts
- External tap-changing handle
- Single set of mounting brackets
- \*Unit shall be filled with virgin “PCB-Free less 1-ppm” mineral oil dielectric fluid with a maximum allowable concentration of less than 1-ppm PCB. A letter from the manufacturer is required to certify that only “PCB-Free” oil is used in the manufacturing process.  
“**Less than 1 PPM PCB**” or “**PCB-Free**” shall be etched or otherwise permanently written on the nameplate.
- 15 kva, 25 kva and 50 kva units shall utilize interlaced secondary windings.
- \*Transformer Pallet opening to accommodate forklift tongues that close in to 30”.

**SPECIFIC UNITS**

The following units shall be quoted at 120/240 volt secondary, one primary bushing, with a tank-mounted direct-connected 10 kv lightning arrester: 15 kva, 25 kva, 50 kva, 75 kva, 100 kva and 167 kva.

The following units shall be quoted at 120/240 volt secondary, and two primary bushings: 15 kva, 25 kva, 50 kva, 75 kva, 100 kva and 167 kva.

The following units shall be quoted at 240/480 volt secondary, and two primary bushings: 25 kva, 50 kva, 75 kva, 100 kva and 167 kva.

The following units shall be quoted at 277 volt secondary, and two primary bushings: 25 kva, 50 kva, 75 kva, 100 kva and 167 kva.

**DATA TO BE SUPPLIED BY SUCCESSFUL VENDOR**

Complete information and dimensional drawings on recommended transformers (preferred and alternate) are to be furnished.

Three (3) instruction booklets containing complete descriptive information and a parts list showing catalog numbers, quantities and diagrams to be included with each unit and three (3) sets of drawings for each unit to include, but not limited to, the following:

- Nameplate
- Outline
- Applicable detail drawing dimensions and features, plus nameplate drawing used for construction, three (3) copies of each.

**LOSSES**

Losses will be evaluated according to the formula shown below. Manufacturer shall provide the necessary information at the time of bid opening to perform the loss evaluation. This loss information should be based on 85 deg. C. at 100% voltage using “guaranteed loss” figures; i.e., the average of the losses of the units involved shall not exceed quoted values and the losses of any individual unit shall not exceed the tolerances in Table 16, ANSI Standard C57.12.00.

In the event that the actual tested losses of the quoted transformer(s) exceed by 10% the guaranteed loss values quoted in the proposal, the purchase price of the unit(s) shall be reduced by the evaluated cost of the difference between actual and guaranteed losses.

Information to be supplied for each unit:

- i) No-Load losses:  

$$\text{_____ KW} \times \$ 2,800.00/\text{KW}^* = \text{_____}$$
- iii) Copper losses:  

$$\text{_____ KW} \times \$ 1,200.00/\text{KW}^* = \text{_____}$$
- iii) Purchase price (each unit) = \_\_\_\_\_
- Total Ownership Cost (i+ii+iii) = \_\_\_\_\_

**BID EVALUATION**

Bids will be evaluated based on the Total Ownership Cost (TOC) of each Bids unit as detailed in Section 8.0 above.

A 5% window will be utilized. Any TOC within 5% of the lowest TOC will be grouped as equal. Bids will then be awarded to the low purchase price within that group.

It is desired that this bid evaluation result in a blanket order to one vendor for all pole mounted transformer units. However, any combination of purchases deemed most advantageous by the City may be selected.

Manufacturer’s Distributors may, as an alternate, provide proposals on stocking, partnering, or consignment arrangements if these arrangements will provide the City with benefits related to either cost or delivery time. The City reserves the option to consider these alternatives during the evaluation of bids.

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DEPARTMENT OF ENERGY  
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**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

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**SUMMARY:** The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including distribution transformers. EPCA also requires the U.S. Department of Energy (DOE) to determine whether more-stringent standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this final rule, DOE is adopting more-stringent energy conservation standards for distribution transformers. It has determined that the amended energy conservation standards for this equipment would result in significant conservation

4.3 **CITY OF DANVILLE, VIRGINIA, DEPARTMENT OF POWER & LIGHT**  
**SPECIFICATION NO. E87-10**

**FOR THREE PHASE PAD-MOUNTED TRANSFORMERS**  
**75 KVA – 1500 KVA**

**DESIGN REQUIREMENTS—ELECTRICAL**

Transformers, as listed, are to be self-cooled (OA), three-phase, 60 hertz, **dead front primary**, padmount units, and designed for outdoor conditions.

Maximum temperature rise at continuous full load to be 65 degree C. above and a 30-degree C. average ambient with a maximum ambient not to exceed 40 degree C.

KVA & Voltage Ratings:

75 KVA through 1500 KVA;  
 12,470 Grd Y/7200-208 Grd Y/120\*

75 KVA through 1500 KVA;  
 12.470 Grd Y/7200-480 Grd Y/277\*

**\*Secondary voltage will be specified for each unit ordered.**

The insulation class shall be 15 KV. The basic insulation level shall be 95 KV (BIL).

\*Unit shall be filled with virgin "PCB-Free <1-ppm" mineral oil dielectric fluid with a maximum allowable concentration of less than 1-ppm PCB. A letter from the manufacturer is required to certify that only "PCB-Free <1-ppm" oil is used in the manufacturing process.

**"Less than 1 PPM PCB"** shall be etched or otherwise permanently written on the nameplate.

Two (2) 2 ½ percent taps above and below nominal voltage on the high voltage windings. Tap changer to be operated externally and de-energized.

Each unit to have Bay-O-Net fuses with dual sensing link mounted in series with **partial range under-oil current-limiting fuses** rated for specified unit(s), and supplied with six (6) extra spare fuse links sealed in weatherproof container. A drip guard is required with each Bay-O-Net fuse.

Each unit shall have a load-break oil rotary (LBOR), oil-immersed, externally stick operable, gang-operated primary switch installed between the loop-feed bushings and the Bay-O-Net fuses. This switch shall be rated 200 amp continuous current, 200-amp loadbreak, and 10,000 amp momentary and fault close.

Six (6) high voltage, universal bushing wells, 15 KV, 95 KV BIL, 200 amp, externally clamped with a four-bolt square clamp or three-bolt triangular clamp, and internally connected in a loop-feed configuration, each complete with 15 KV, 95 KV BIL 200 amp, load break bushing inserts. Centerline of primary bushings sets above the transformer base line are to be as follows:

<u>75 kva through 1500 kva</u>	
H <sub>1A</sub> & H <sub>1B</sub>	39" (±1")
H <sub>2A</sub> & H <sub>2B</sub>	33" (±1")
H <sub>3A</sub> & H <sub>3B</sub>	27"(±1")

Low voltage neutral bushings to be externally grounded with a removable copper strap.

Four (4) low-voltage line and neutral bushings, staggered configuration, 1.2 KV, 30 KV BIL with epoxy or porcelain bushing and tin-plated copper alloy spades NEMA 6-hole "J" type (8-hole 750 kva & above), **unless otherwise specified**. Centerlines of secondary bushings sets above the transformer base line are to be as follows:

75 kva through 1500 kva

X<sub>0</sub> & X<sub>2</sub> 27"( $\pm 1$ " )

X<sub>1</sub> & X<sub>3</sub> 33"( $\pm 1$ " )

225 kva through 500 kva

X<sub>0</sub> & X<sub>2</sub> 31"( $\pm 1$ " )

X<sub>1</sub> & X<sub>3</sub> 39"( $\pm 1$ " )

750 kva through 1500 kva

X<sub>0</sub> & X<sub>2</sub> 46"( $\pm 1$ " )

X<sub>1</sub> & X<sub>3</sub> 54"( $\pm 1$ " )

Each shall be plainly marked on the tank surface for easy identification of phase and neutral position. Secondary spades and bushings to be suitable for use with concentrically mounted metering current transformers having a maximum throat depth of 2 ½" (6.35cm) and a window (*opening*) size of 3.5" x 4.5" (8.89 x 11.43 cm), allowing the current transformer to slide over the spade and onto the bushing permitting utilization of all holes in the secondary spade.

Each unit shall have an internal connection between the high voltage-low voltage neutrals, ("Ho-Xo") to be tied with a "Removable Link" which is externally accessible through the transformer tank cover handhole.

### **DESIGN- MECHANICAL**

High voltage-low voltage compartment bolted and grounded to the transformer tank with separate, hinged, lift-off doors for high voltage and low voltage sections. High voltage door secured by a captive bolt(s) and accessible only after the low voltage door is open. Doorstop holders provided for both doors, which allow a stop a minimum of 110 degrees open. Compartment depth to be a minimum of 18".

Three-point low-voltage termination compartment door latching with padlocking provisions on the door handle and a captive **Penta** head bolt for tamper resistance.

Removable termination compartment doorsill to permit sliding unit over entrance cables.

(75 KVA through 500 KVA) Non-conductive insulating barrier between the high voltage and low voltage sections.

(750 KVA through 1500 KVA) Permanent steel divider plate between high voltage and low voltage sections with ¼" Benelex, or equal, insulating board on secondary compartment wall as necessary. **This option is acceptable on all sizes.**

A minimum of six (6) standoff brackets to be welded to the transformer tank wall in the high-voltage section to facilitate the parking of all six (6) elbows, if necessary during switching operations. Standoff brackets must be welded full length.

One (1) transformer oil level gauge, mounted in the secondary compartment, which indicates "Low, 25 deg. C, and High" levels.

(75 KVA through 1500 KVA) Each unit to have a one-inch (1") IPS drain valve with a sampling device.

Each unit to have a one-inch IPS threaded flange for upper filter connection.

Lifting lugs for lifting transformer complete, filled with oil, located on the top of the four corners of the transformer tank. Each lug to be rated at 50% (min.) of the total weight.

Main transformer tank cover to be welded to the tank.

A handhole cover, gasketed and bolted to the main transformer tank cover.

Three (3) ground pads, welded to the transformer tank, one in the bottom of the high-voltage section and one in the bottom of the low-voltage section, and one just below the neutral bushing in the low-voltage section. Each copper or copper-clad with two (2) 1/2"- 13 NC tapped holes, 1/2" deep on 1-3/4" centers. (A single 1/2"-13 NC tapped hole would only be permissible for the ground pad located in the secondary external neutral position.)

Cooling radiators to be permanently welded to the transformer tank.

Stainless steel or anodized aluminum nameplate to be mounted inside of the low voltage door or in low voltage compartment displaying information to include, but not limited to, the following:

Manufacturer's name and address

Transformer self-cooled rating and temperature rise.

Complete schematic and connection diagram of windings.

Phaser diagram.

Transformer impedance in percent.

Transformer weights, including separate weights for the following: tank, core and coil, oil and total.

Quantity, in gallons, of insulating oil needed to fill transformer to normal operating level.

Installation and operating instruction book reference numbers.

Conductor material of each winding.

Year of manufacturer.

Must state, "Filled with mineral oil that contained less than one part per million PCB contamination at time of manufacture".

Tap positions and voltages.

Basic lighting impulse insulation levels (BIL's).

Type of Insulation oil.

Entire transformer to be painted "Outdoor Green" Munsell No. 7 GY 3.29/1.5. Unit to be shipped with one (1) spray can each of primer and touch-up paint to match that specified for the unit.

Surfaces in contact with the ground to have a coating of moisture resistant compound.

Qualitrol or equal integral high-pressure relief device must be provided, manually operated with a pull ring, self-resealing with indicator in secondary compartment and placed above maximum oil level. **(Data on relief valve operating pressure to be supplied on unit specification drawings)**

## **TESTING**

The successful bidder is to supply the City of Danville Electric Division with three (3) copies of the following tests which are to be performed on the unit supplied:

75 KVA through 300 KVA:

No-load losses of winding and core at rated voltage on the rated voltage connection.

Exciting current at the rated voltage on the rated voltage connection.

Induced-potential test.

Ratio tests at rated voltage on all tap connections.

Pressure leak test.

Polarity and phase relation tests on the rated voltage connection.

Impedance and load-loss test results at the rated current on the rated voltage connection for a similar or duplicate unit.

500 KVA through 1500 KVA

**\*\*Substitute** the following test for 500 through 1500 KVA units:

Impedance and load loss tests at the rated current of the rated voltage connection.

**\*\*Add** the following test for 500 through 1500 KVA units:

Resistance measurements of all windings on the rated voltage tap.

**DATA TO BE SUPPLIED WITH VENDOR PROPOSAL**

Typical design (including outline) drawings of the units bid must be included with the bid proposal.

**DATA TO BE SUPPLIED BY THE SUCCESSFUL BIDDER**

Three (3) instruction booklets containing complete descriptive information and a parts list showing catalog numbers, quantities and diagrams to be included with each unit. Also three (3) sets of drawings for each unit to include, but not be limited to, the following:

Nameplate

Outline

Applicable detail drawings

(75 KVA through 500 KVA) Outline drawings showing dimensions and features, plus a nameplate drawing used for construction, three (3) copies each, must precede shipment of unit bid.

(750 KVA through 1500) Drawings of each transformer bid must be received by the Electric Division's Chief Engineer within fourteen (14) calendar days after award of purchase order and approved by same prior to the beginning of manufacture.

**DELIVERY**

Date of shipment from the factory and the location of the factory to be supplied with the bid proposal on each unit quoted.

Transformers to be delivered to:  
 City of Danville Electric Division  
 1040 Monument Street  
 Danville, Virginia 24541.

**All shipments to be marked "FLAT BED ONLY"**

**LOSS EVALUATION**

Losses will be evaluated according to the formula shown below.

Manufacturer shall provide the necessary information at the time of bid opening to perform the loss evaluation. This loss information should be based on 85 deg. C. at 100% voltage using "guaranteed loss" figures; i.e., the average of the losses of the units involved shall not exceed quoted values and the losses of any individual unit shall not exceed the tolerances in Table 16, ANSI Standard C57.12.00.

In the event that the actual tested losses of the quoted transformer(s) exceed by 10% the guaranteed loss values quoted in the proposal, the purchase price of the unit(s) shall be reduced by the evaluated cost of the difference between actual and guaranteed losses.

\_\_\_\_\_KVA UNITS(S):

No-Load losses:

\_\_\_\_\_ KW x \$ **2,800.00** \* /KW = \_\_\_\_\_

Copper losses:

\_\_\_\_\_ KW x \$ **1,200.00** \* /KW = \_\_\_\_\_

Bidder price (each unit) = \_\_\_\_\_

Total evaluated cost (i+ii+iii) = \_\_\_\_\_

**DOE STATEMENT**

**[6450-01-P]  
DEPARTMENT OF ENERGY  
10 CFR Part 431  
[Docket No. EERE-2010-BT-STD-0048]  
RIN: 1904-AC04**

**Energy Conservation Program: Energy Conservation Standards for Distribution Transformers**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Final rule.

**SUMMARY:** The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including distribution transformers. EPCA also requires the U.S. Department of Energy (DOE) to determine whether more-stringent standards would be technologically feasible and economically justified, and would save a significant amount of energy. In this final rule, DOE is adopting more-stringent energy conservation standards for distribution transformers. It has determined that the amended energy conservation standards for this equipment would result in significant conservation

City of Danville  
IFB 14/15-138 Bid Proposal

In compliance with Invitation to Bid No.14/15-138 and subject to all conditions thereof and attached hereto, the undersigned offers and agrees if this bid be accepted to furnish any and all of the items or services for the sum of:

ITEM	COMMODITY	QTY	AMOUNT
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1	25 KVA Single-phase padmount transformers: 120/240V Secondary; 7.2 KV/12.47 Primary per attached spec no. 88-5	<b>10 each</b>	
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Offering:      Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 10      \$ \_\_\_\_\_

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2	100 KVA Single-phase padmount transformers: 120/240V Secondary; 7.2 KV/12.47 Primary per attached spec no.88-5	<b>5 each</b>	
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Offering:      Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 5      \$ \_\_\_\_\_

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3	167 KVA Single-phase padmount transformers: 120/240V Secondary; 7.2 KV/12.47 Primary per attached spec no.88-5	<b>2 each</b>	
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Offering:      Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 2      \$ \_\_\_\_\_

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- 4 15 KVA pole mount transformers Single-phase,1-bushing  
120/240V; 7.2 KV Primary per attached spec no.88-4 **30 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 30        \$ \_\_\_\_\_

- 5 25 KVA pole mount transformers Single-phase,1-bushing  
120/240V; 7.2 KV Primary per attached spec no.88-4 **30 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 30        \$ \_\_\_\_\_

- 6 25 KVA pole mount transformers Single-phase,1-bushing  
277/480V; 7.2 KV/12.47 Primary per attached spec no.88-4 **9 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 9        \$ \_\_\_\_\_

- 7 50 KVA pole mount transformers Single-phase, 1-bushing  
277/480V; 7.2 KV/12.47 Primary per attached spec no.88-4 **9 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 9            \$ \_\_\_\_\_

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- 8 150 KVA three phase pad mount transformers 120/208V;  
7.2/12.47 KV Primary per attached spec no.87-10 **4 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 4            \$ \_\_\_\_\_

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- 9 225 KVA three phase pad mount transformers 120/208V;  
7.2/12.47 KV Primary per attached spec no.87-10 **3 each**

Offering:            Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 3            \$ \_\_\_\_\_

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10 300 KVA three phase pad mount transformers 120/208V;  
7.2/12.47 KV Primary per attached spec no.87-10 **3 each**

Offering: Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 3 \$ \_\_\_\_\_

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11 225 KVA three phase pad mount transformers 277/480V;  
7.2/12.47 KV Primary per attached spec no.87-10 **2 each**

Offering: Make: \_\_\_\_\_ Delivery ARO: \_\_\_\_\_

A. Purchase Price = \$ \_\_\_\_\_ EA.

B. No load losses: \_\_\_\_\_ KW X \$2,800.00/KW = \$ \_\_\_\_\_

C. Copper losses: \_\_\_\_\_ KW X \$1,200.00/KW = \$ \_\_\_\_\_

Total Owning Cost (A + B + C) = \$ \_\_\_\_\_ X 2 \$ \_\_\_\_\_

The undersigned Bidder acknowledges receipt of the following Addenda, which have been considered in the preparation of this Bid:

No. \_\_\_\_\_ Dated \_\_\_\_\_

No. \_\_\_\_\_ Dated \_\_\_\_\_

No. \_\_\_\_\_ Dated \_\_\_\_\_

Company Name \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_  
Zip Code

Signature \_\_\_\_\_

AFFIX COMPANY SEAL  
(if applicable)

Signature (Printed) \_\_\_\_\_

Title \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Commonwealth of Virginia State Corporation Commission Identification Number \_\_\_\_\_.